Bike Sales BI Report

A Business Intelligence Analysis

Aaraiz Masood 26988

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Contents

1 Introduction

This report analyzes a Bike Sales dataset, leveraging OLAP-style *drill-down* analyses. The key columns (headers) in the dataset are:

- **Date, Day, Month, Year** (Order dates)
- **Customer_Age, Age_Group, Customer_Gender** (Demographics)
- **Country, State** (Geography)
- **Product_Category, Sub_Category, Product** (Product dimensions)
- **Order_Quantity, Unit_Cost, Unit_Price, Profit, Cost, Revenue** (Transactional facts)

We focus on two main business problems:

1. Profit Analysis (Identifying high vs. low profit products and categories)
2. Customer Analysis (Understanding age/gender/price range patterns across countries)

2 Facts, Dimensions, and Useless Variables

Facts (Measurable Fields)

- **Order_Quantity** – number of units purchased
- **Unit_Cost** – cost per item
- **Unit_Price** – price per item
- **Profit** – profit generated for the line item
- **Cost**
- **Revenue**

Dimensions (Categorical Fields)

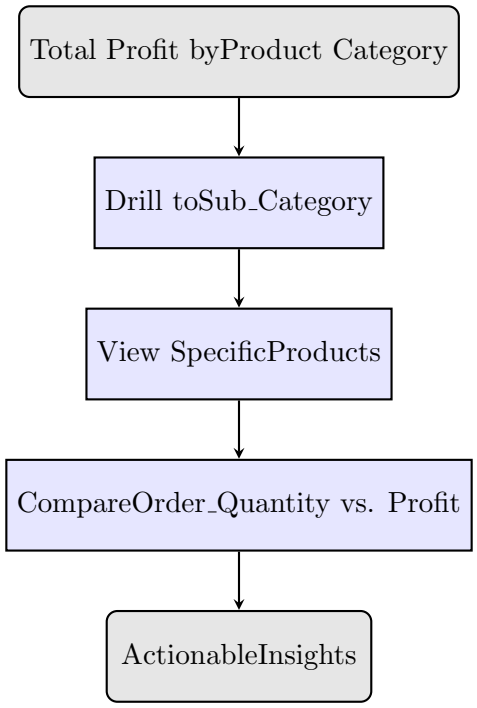
- **Date / Day / Month / Year** – for time-based analysis
- **Customer_Age, Age_Group, Customer_Gender** – demographic segmentation
- **Country, State** – geographic segmentation
- **Product_Category, Sub_Category, Product** – product hierarchy

3 Business Problem 1: Profit Analysis

3.1 Statement of the Problem

"Which products and categories contribute the most (and least) to overall profit, and how can we leverage this information to maximize profitability?"

3.2 Drill-Down Process Diagram



3.3 Observations

- Certain bikes (e.g. *Mountain-200*) may show a small *Order_Quantity* but high *Profit*.
- Accessories like *Patch Kits* might have high *Order_Quantity* but minimal *Profit*.
- Clothing items (e.g., *Women's Mountain Shorts*) could have moderate volume with strong margins.

3.4 Recommendations

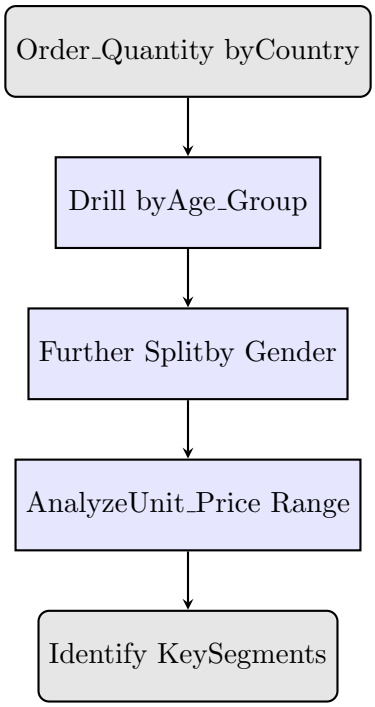
- **Promote Premium Products:** Low-volume, high-profit items can be featured to increase overall margin.
- **Bundle Low-Margin Items:** Combine accessories like *Water Bottles* or *Patch Kits* with premium bikes for upselling.
- **Monitor Cost vs. Price Carefully:** Identify if any product's *Unit_Cost* has risen faster than *Unit_Price*.

4 Business Problem 2: Customer Analysis

4.1 Statement of the Problem

"Which demographic segments (Age_Group, Customer_Gender) drive the most orders, and how does pricing (Unit_Price ranges) vary by geography?"

4.2 Drill-Down Process Diagram



4.3 Observations

- **Adults (35–64)** often comprise the highest Order_Quantity across multiple countries.
- **Young Adults (25–34)** represent a strong secondary segment, especially in certain regions.
- **Below $50** price range might dominate volume, while higher price ranges ($$500+) are fewer but may yield larger profits.
- Gender splits can reveal if *male* or *female* customers prefer certain categories or price tiers.

4.4 Recommendations

- **Focus on Top Demographics:** Tailor marketing to 35–64 if they form the bulk of revenue, or 25–34 if you see growth potential.

- **Promote Premium Bikes in Key Markets:** Countries like the US or Germany might purchase more high-priced items
- **Upsell Mid-Price Range Shoppers:** Convert below-$50 accessory customers to mid-range bikes using targeted promotions.